WHAT IS CLAIMED IS:

1   1.   A system for managing data transactions between a first bus and a second

2 bus, comprising:

3   a first transaction conversion module operably connected to said first bus, said

4   first transaction conversion module being operable to receive transactions

5   from said first bus in a first format and to convert said transactions into an

6   internal format;

7   a fully programmable ordering rules logic module operably connected to said first

8   transaction module to receive said converted transactions in said internal

9   format and to control issuing of said transactions in accordance with a

10   dependency relationship between said individual transactions and further

11   operable to issue validated transactions;

12   a second transaction conversion module operably connected to said transaction

13   ordering logic and to said second bus, said second transaction conversion

14   module being operable to convert said validated transactions into a second

15   format for said second bus.

1   2.   The system of claim 1, wherein transactions on said first bus are managed

2 using a first set of ordering rules and transactions on said second bus are managed using a

3 second set of ordering rules.

1   3.   The system of claim 1, wherein said transactions comprise a time stamp

2 and wherein said ordering rules logic module is operable to use said time stamp to issue

3 said transactions.

1   4.   The system of claim 3, wherein said rules logic module is operable to

2 validate said transactions using a protocol based on an efficiency algorithm optimizing

3 the availability of said second bus to accept a validated transaction.

1   5.   The system of claim 4, wherein said ordering rules logic module is
2   programmed by a configuration status register.

1   6.   The system of claim 5, wherein said ordering rules are implemented by
2   first and second arbiters.

1   7.   The system of claim 6, wherein said first arbiter accepts a transaction to be
2   issued from a plurality of validated transactions within a first virtual channel.

1   8.   The system of claim 7, wherein said second arbiter chooses a validated
2   transaction to be issued from a plurality of validated transactions among all of said virtual
3   channels.

1   9.   The system of claim 8, wherein data in said configuration status register is
2   used to control said first arbiter to choose validated transactions.

1   10.   The system of claim 9, wherein data in said configuration status register is
2   used to control said second arbiter to choose validated transactions.

1   11   The system of claim 10, wherein said first arbiter chooses validated
2   transactions from within a plurality of validated transactions in a plurality of virtual
3   channels.

1   12.   The system of claim 11, wherein each of said plurality of transactions has
2   an individual dependency set.

1   13.   ·The system of claim 11, wherein at least one of said transactions does not
2   have a dependency set and is validated.

1   14.   A method for managing data transactions between a first bus and a second
2 bus, comprising:
3   receiving a first transaction in a conversion module operably connected to said
4   first bus, said first transaction conversion module being operable to
5   receive transactions from said first bus in a first format and to convert said
6   transactions into an internal format;
7   receiving said converted transaction in a fully programmable ordering rules logic
8   module operably connected to said first transaction module;
9   using said ordering rules logic module to validate said transactions and to control
10   issuing of said transactions to a second transaction module in accordance
11   with a dependency relationship between a plurality of transactions; and
12   using a second transaction conversion module to convert said validated
13   transactions into a second format for said second bus.

1   15.   The method of claim 14, wherein transactions on said first bus are
2 managed using a first set of ordering rules and transactions on said second bus are
3 managed using a second set of ordering rules.

1   16   The method of claim 15, wherein said transactions comprise a time stamp
2 and wherein said ordering rules logic module is operable to use said time stamp to issue
3 said transactions.

1   17.   The method of claim 16, wherein said rules logic module is operable to
2 validate said transactions using a protocol based on an efficiency algorithm optimizing
3 the availability of said second bus to accept a validated transaction.

1   18.   The method of claim 17, wherein said ordering rules logic module is
2 programmed by a configuration status register.

1   19.   The method of claim 18, wherein said ordering rules are implemented by
2 first and second arbiters.

1   20.   The method of claim 19, wherein said first arbiter accepts a transaction to
2   be issued from a plurality of validated transactions within a first virtual channel.

1   21.   The method of claim 20, wherein said second arbiter chooses a validated
2   transaction to be issued from a plurality of validated transactions among all of said virtual
3   channels.

1   22   The method of claim 21, wherein data in said configuration status register
2   is used to control said first arbiter to choose validated transactions.

1   23.   The method of claim 22, wherein data in said configuration status register
2   is used to control said second arbiter to choose validated transactions.

1   24.   The method of claim 23, wherein said first arbiter chooses validated
2   transactions from within a plurality of validated transactions in a plurality of virtual
3   channels.

1   25.   The method of claim 24, wherein each of said plurality of transactions has
2   an individual dependency set.

1   26.   The method of claim 25, wherein at least one of said transactions does not
2   have a dependency set and is validated.